

- Properties of Non-Metals:

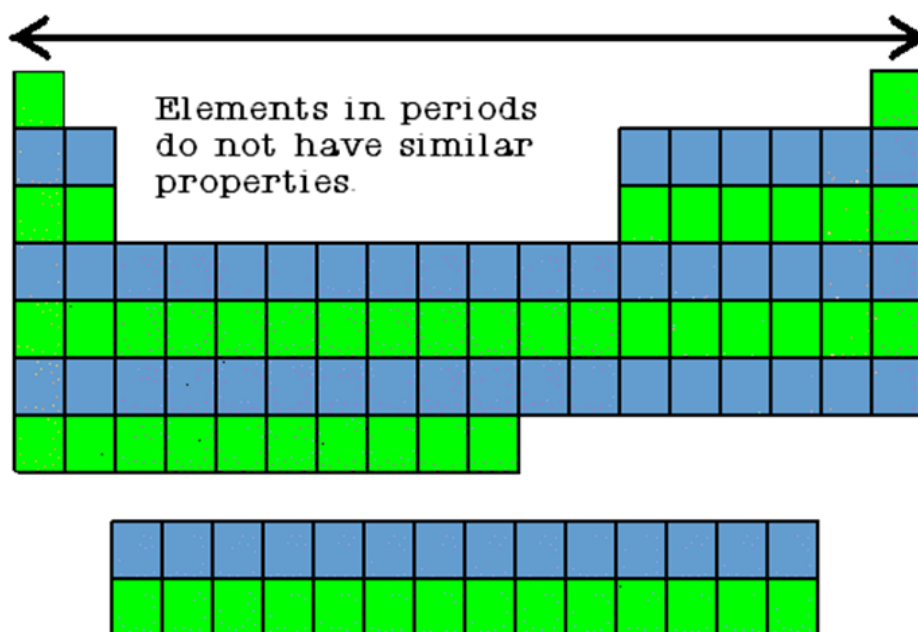
- Found on right side of periodic table
- Non-metals are
 - poor conductors of heat and electricity
 - not ductile or malleable (solid non-metals break rather than bend)
 - they are dull in appearance
- Many non-metals are gas

- Properties of Metals:
 - Found on left side of periodic table
 - Metals are
 - shiny
 - good conductors of heat and electricity
 - ductile (make into thin wires)
 - malleable (make into thin sheets)
 - Chemical property is that metals react with water, which results in rust/corrosion

• Properties of Metalloids:

- Located between metals and non-metals on periodic table
- Have properties of both metals and non-metals
- They are
 - Solids can be dull or shiny
 - ductile and malleable
 - conduct heat and electricity better than non-metals but not as well as metals

The elements are also categorized into periods, or horizontal rows.



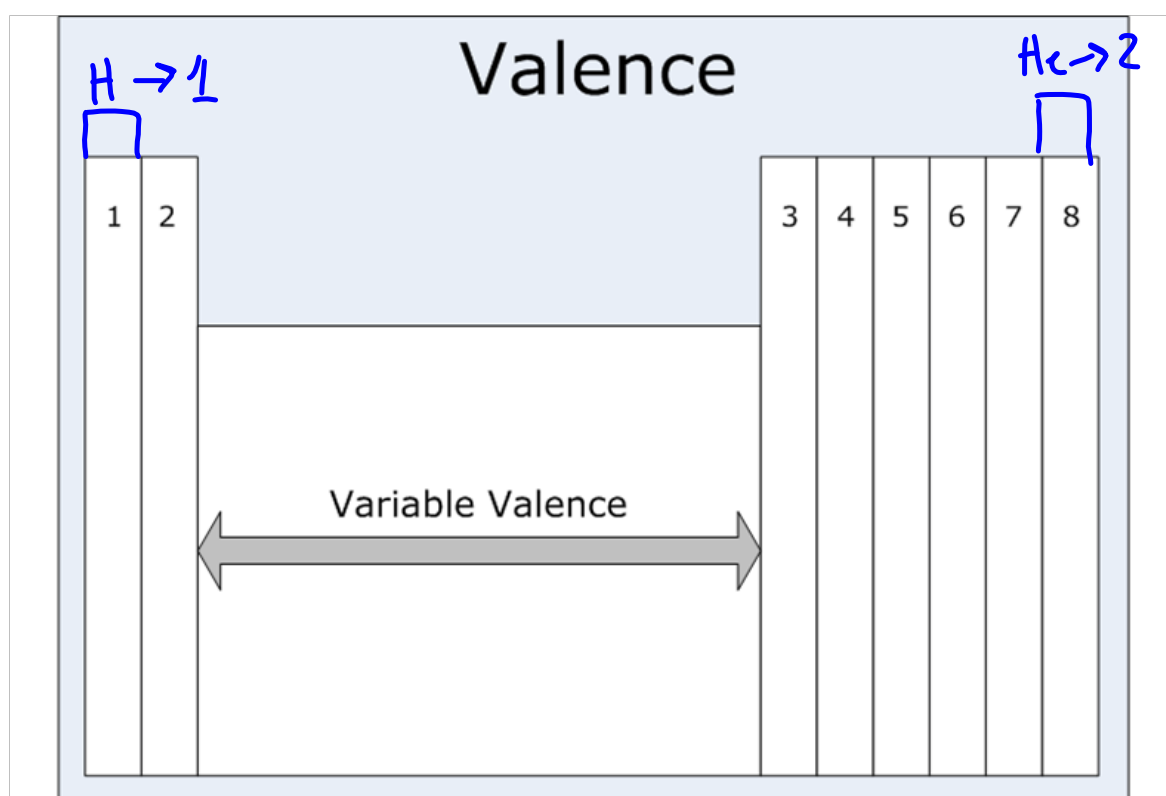
- Periods (Horizontal Rows):
 - Properties are NOT alike
 - Each element in a period has the same number of energy levels (Can have different sub-orbitals, but will have same energy level)
 - As you go from left to right, 1st element is an extremely active solid and last element is inactive gas
active/inactive chemically
 - Also increase atomic number (# of p^+) as you move from left to right

1	2		3	4	5	6	7	8	9	10	11	12		13	14	15	16	17	18
Alkali Metal Family	Alkaline Earth Metal Family	Transition Metal Family											Boron Family	Carbon Family	Nitrogen Family	Oxygen Family	Halogen Family	Noble Gas Family	
		Lanthanide Series																	
		Actinide Series																	

- Families or Groups
 - Columns on periodic table
 - Elements in each family have very similar properties (physical and chemical)
 - All elements in a family have the same number of valence electrons
 - As you move down a family, each element has another energy level

- Hydrogen

- Even though H is "attached" to group 1, it is NOT a part of group 1.
- NOT a part of the group because it has different physical and chemical properties
- Gas at room temperature
- 1 e^- in 1 energy level
- only needs 2 e^- to fill energy level



- Specific Families:
 - Group 1 \rightarrow Alkali Metals
(starts with lithium)
 - 1 valence e^-
 - Often react with Halogen family ($7e^-$)
 - Very reactive, especially with water
 - Group 2 \rightarrow Alkaline Earth Metals
 - 2 valence e^-
 - Often react with Oxygen family
 - Less reactive than Alkali Metals

- Group 3-12 \rightarrow Transition Metals
 - Good conductors of heat and electricity
 - Valence e^- (and thus oxidation numbers) will vary
 - Can bond with a variety of elements in a variety of shapes

- Group 13 → Boron Family
 - Most are metals
 - Boron is a metalloid
- Group 14 → Carbon Family
- Group 15 → Nitrogen Family
 - These contain non-metals, metalloids, and metals
- Group 16 → Oxygen Family
 - React typically with Alkaline Earth Metals
 - Contains metals, metalloids, and non-metals
- Group 17 → Halogen Family
 - All non-metals
 - Very reactive